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# Courses of mental arithmetics. Influence on child's brain development.

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#### ABSTRACT

This article examines the impact of mental arithmetic on the development of a child's brain, as well as the functions performed by the right and left hemispheres of the child's brain.

Key words: Mental arithmetic, Abacus abacus, beads, brain, left-handed, right-handed, ambidextrous.

#### 1. INTRODUCTION

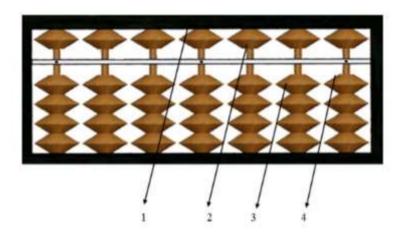
Every parent wants his child to grow up as a diversified person. For our hopes and dreams concerning the future of children to come true, there are all conditions for the realization of these dreams and hopes. Our children are diligent in knowledge, study at school and in out-of-school educational institutions, at the level of their needs.

Mental arithmetic circles organized in children's schools "Barkamol Avlod" are one of those places where our children develop their mental thinking very quickly and verbally in an original way.

Mental arithmetic is a method that very quickly develops in a child the mental skills of oral arithmetic, with a few minutes of exercise, playing with fingers and mental gymnastics in each lesson.

One of the main tasks of the circle is to ensure the equal functioning of the right and left hemispheres of the child's brain, the development of such good qualities as self-confidence, attention, memory, creative thinking, observation, imaginative thinking.[1]

It is important to note that in the lessons of mental arithmetic, children learn to perform arithmetic operations using abacus, the so-called abacus or soroban (Fig.1).



1.externalframe2.the top row of beads3.bottom row of beads4.calculated (dividing) ruler

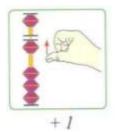
## Picture 1

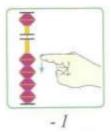
The abacus beads should be positioned as shown in Figure 1, i.e. the top beads should touch the top of the abacus lid and the bottom beads should touch the bottom frame. The abacus is now ready to perform arithmetic operations.

## 2. MAIN PART

The dividing line in the middle does not touch the beads at the top or bottom. Thus, the account is in a "zero state". Please note that to start calculating on the abacus account, the account must be in zero position. To write the numbers from one to four, the bottom beads are used. Let's start by calculating column 1 on the left. Here's one rule to keep in mind. With the help of the thumb, the beads located below are lifted up by touching the dividing line. As shown in Figure 2, we created the number 1 using our thumb. So, we do the addition of the lower thumbs and division with the index finger [3].

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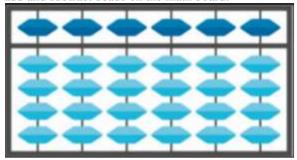




Picture 2

To write the number 2, the number 2 must touch the value line. Bead 3 is used to write 3 and bead 4 is used to write 4. You can see that this process only happens in column 1. From this we can conclude that in column 1 are single digits, in column 2 - decima umbers, in column 3 - hundreds, etc. represents umbers, in column 3 - hundreds, etc. represents.

In a mental arithmetic lesson, children are taught to perform this process on the math board (Figure 3) after they have learned how to add and subtract beads on the math board.



Picture 3. Abacus board

Abacus Counting - Allows children to perceive geometric shapes. Children with the help of their fingers move each bead on the board, before calculating a ruler, in their imagination. Example: 2 + 2 - 1 - 2 + 3

When he hears numbers, the children begin to mentally sort out the beads. He remembers the location of each bead and when asked about the answer, he tells them exactly where these beads are.

Learn to actively use the board for calculating the arithmetic formulas taught in each lesson. Now the child learns to solve examples by reading the poems of the great writers he previously learned.

In this method, the teacher repeats the numbers in the example. During this process, the child reads a poem he or she has memorized, listens to the teacher's numbers and solves the example by moving the beads while looking at the bulletin board.

Here it is necessary to dwell in more detail on the human brain. The human brain has two parts: the left and right hemispheres. The centers of speech are located in the left hemisphere of the brain. Thus, all thought operations related to speech are performed in the left hemisphere of the brain.

The right hemisphere of the brain is responsible for analyzing the spatial arrangement of objects. This means that the right hemisphere of the brain perceives the world without words, and here, in general, visual analyzers are of great importance. Figuratively speaking, the left hemisphere perceives the world primarily through words, while the right hemisphere perceives the world through its eyes. When these harmonies are preserved, a person's memory is greatly strengthened [2].

While solving the above example, both hemispheres of the child's brain are active, that is, the left hemisphere of the brain is active while reading the poem, and the eyes can move geometric shapes on the abacus board. The right hemisphere was also activated while solving examples.

This method is very helpful for children. There are times when a child can become left-handed. In the left hemisphere, speech centers are located in the right hemisphere of the brain. This means that most of the functions performed by the left hemisphere are assigned to the right hemisphere.

Another effective way to ensure equal development of the right and left hemispheres of the brain in children is a colored board

yellow black red red green blue yellow black green black yellow red green red green yellow blue green yellow red blue vellow black red green Picture 4

For children to use the color board, they must be able to read words. He should only say the color of the word "yellow" on the board, or "blue". In the same way, he should not read the word itself, he should indicate the color of the following words.

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As a result of performing such exercises every day, you can see that the child learns without mistakes. Now we will keep track of how many words the child pronounces correctly every day and how long he does it.

In society, in addition to right-handers and left-handers, there are also ambidexters - who equally own both hands. This is an action that a person has that both hemispheres of the brain are equally involved in the performance of higher mental functions. These are people who can do the same thing with both hands. [2]

There is another way to teach children to work with both hands. Using this technique, as shown in Picture 5, throughout the lesson helps the children focus and develop their brains. The method is a simultaneous drawing with two hands [4]



Picture 5

Prepared for children as shown in the picture. When using this method, the attention of children is focused on how their hands work at the same time together and then connect these points. Children will have a lot of fun. As parents yourself, you can also practice spelling your first and last name with both hands at the same time every day. Once they learn to do the exercise well with both hands, you can make the exercise a little more difficult. Children can draw a triangle with one hand and a circle or other geometric shape with the other. The children then learn to use both hands at the same time.

#### 3. CONCLUSION

It can be concluded that if the child uses the above methods in his free time every day, the child also develops well, the ability to remember the location of others around different objects. These exercises can be used not only in mental arithmetic, but also in other school lessons. These skills quickly help a child's brain develop correctly and strongly.

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